

# ***Brp* Cas9-CKO Strategy**

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# Project Overview

**Project Name**

*Brp*

**Project type**

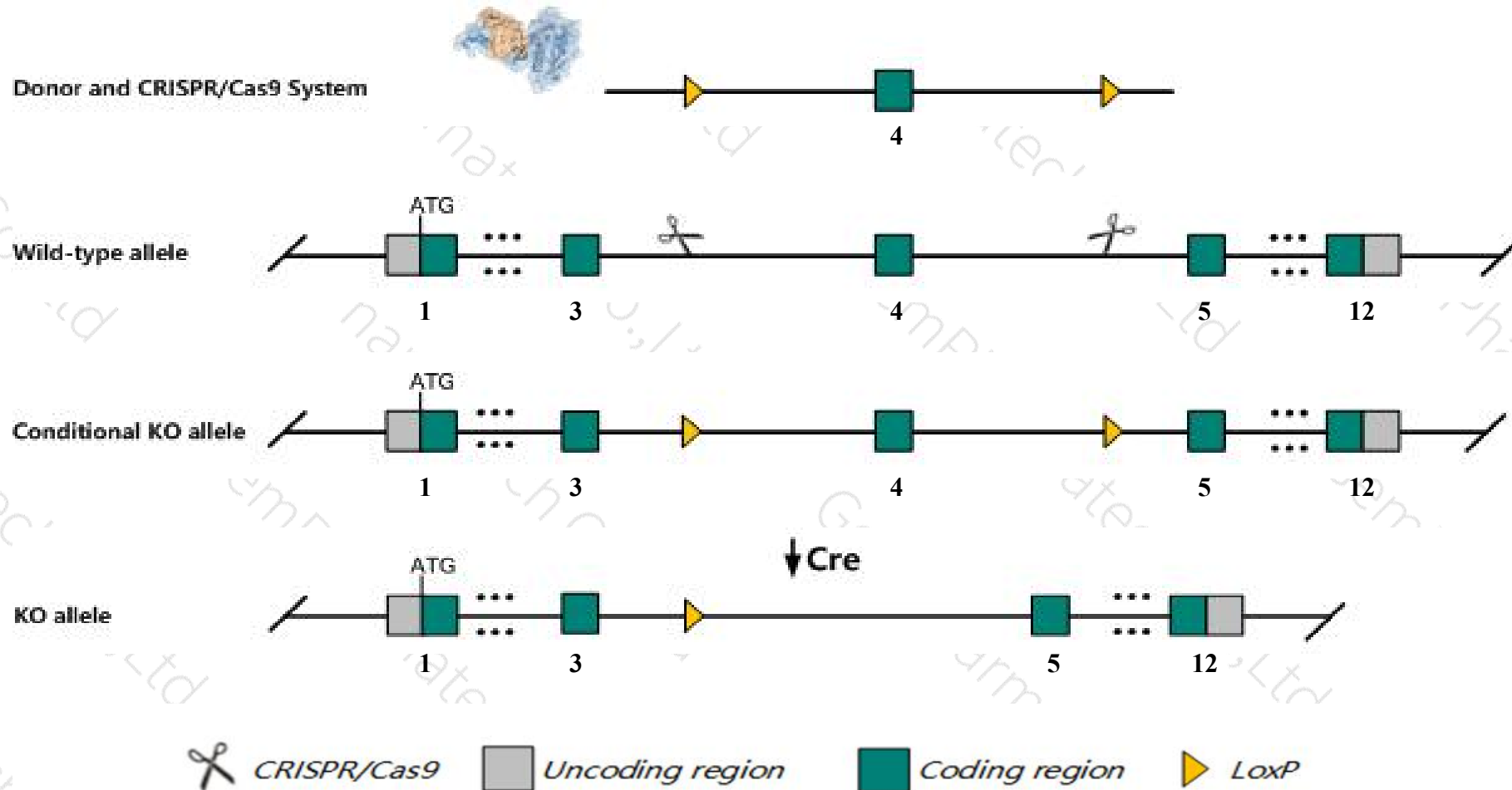
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Brp* gene. The schematic diagram is as follows:



# Technical routes

- The *Brap* gene has 9 transcripts. According to the structure of *Brap* gene, exon4 of *Brap-201*(ENSMUST00000031414.14) transcript is recommended as the knockout region. The region contains 190bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Brap* gene. The brief process is as follows: CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit embryonic lethality during organogenesis and subtle defects in cell cycle-dependent nuclear movement in neural progenitors.
- The *Brp* gene is located on the Chr5. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.



# Gene information (NCBI)

## Brp BRCA1 associated protein [ *Mus musculus* (house mouse) ]

Gene ID: 72399, updated on 26-Jun-2020

### Summary

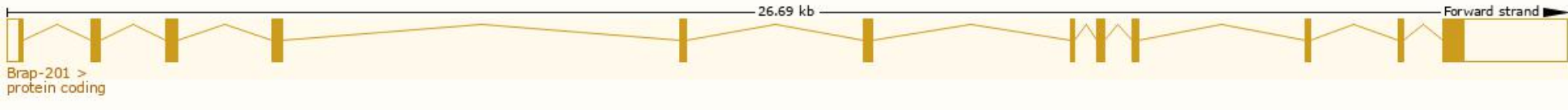
Official Symbol	Brp provided by <a href="#">MGI</a>
Official Full Name	BRCA1 associated protein provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1919649</a>
See related	<a href="#">Ensembl:ENSMUSG00000029458</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	IMP; BRAP2; 3010002G07Rik
Expression	Ubiquitous expression in testis adult (RPKM 46.8), liver adult (RPKM 15.7) and 28 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

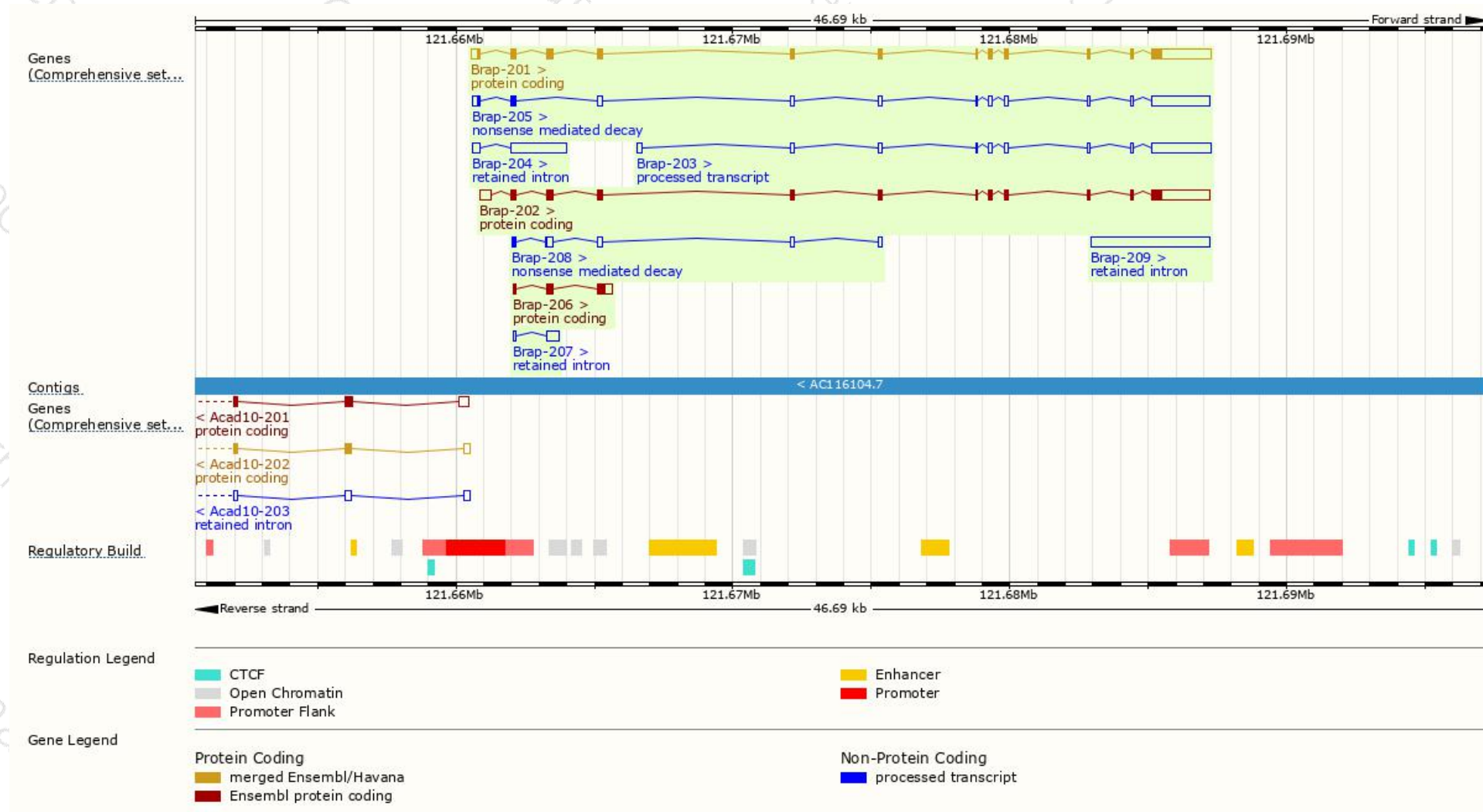
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Brp-208	<a href="#">ENSMUST00000195952.4</a>	827	<a href="#">57aa</a>	Nonsense mediated decay	-	<a href="#">A0A0G2JFY1</a>	CDS 5' incomplete TSL:3
Brp-205	<a href="#">ENSMUST00000140996.5</a>	3524	<a href="#">83aa</a>	Nonsense mediated decay	-	<a href="#">D6RG84</a>	TSL:1
Brp-206	<a href="#">ENSMUST00000142701.2</a>	851	<a href="#">199aa</a>	Protein coding	-	<a href="#">A0A0G2JF68</a>	CDS 5' incomplete TSL:1
Brp-202	<a href="#">ENSMUST00000111765.7</a>	3861	<a href="#">561aa</a>	Protein coding	<a href="#">CCDS80389</a>	<a href="#">Q99MP8</a>	TSL:1 GENCODE basic
Brp-201	<a href="#">ENSMUST00000031414.14</a>	3744	<a href="#">591aa</a>	Protein coding	<a href="#">CCDS19640</a>	<a href="#">Q99MP8</a>	TSL:1 GENCODE basic APPRIS P1
Brp-203	<a href="#">ENSMUST00000127703.2</a>	3094	No protein	Processed transcript	-	-	TSL:1
Brp-209	<a href="#">ENSMUST00000196897.1</a>	4318	No protein	Retained intron	-	-	TSL:NA
Brp-204	<a href="#">ENSMUST00000132491.1</a>	2222	No protein	Retained intron	-	-	TSL:2
Brp-207	<a href="#">ENSMUST00000148052.1</a>	492	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Brp-201* transcript,the transcription is shown below:

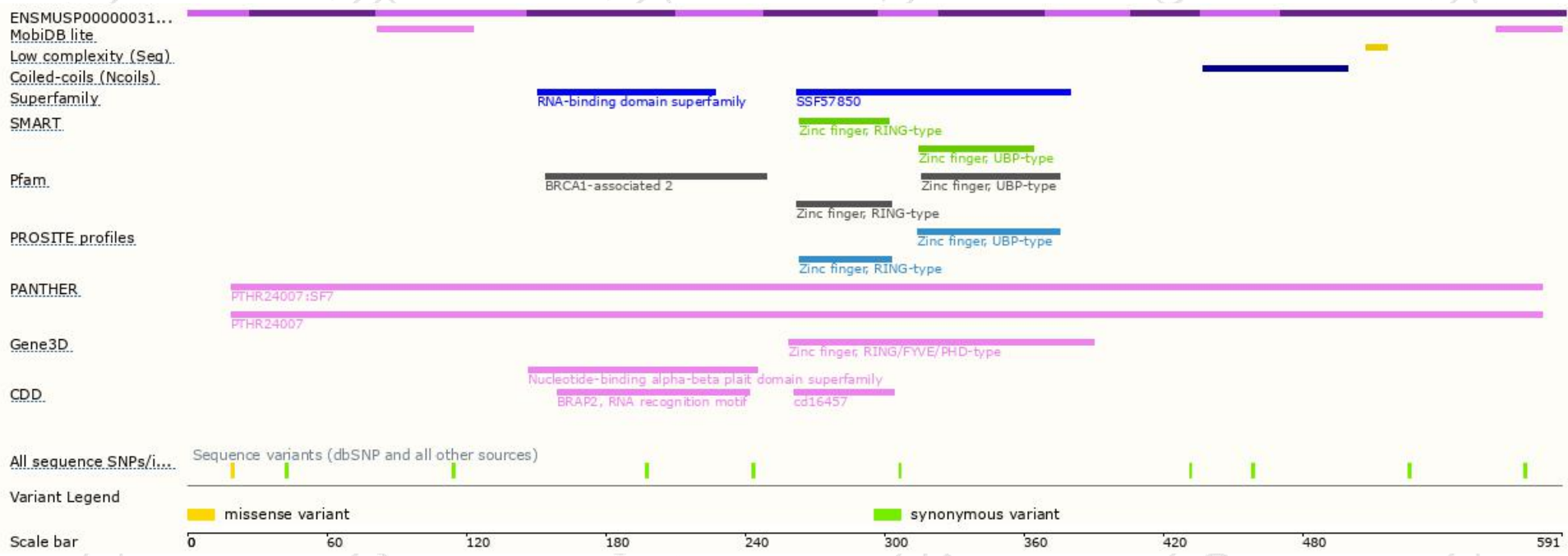


# Genomic location distribution

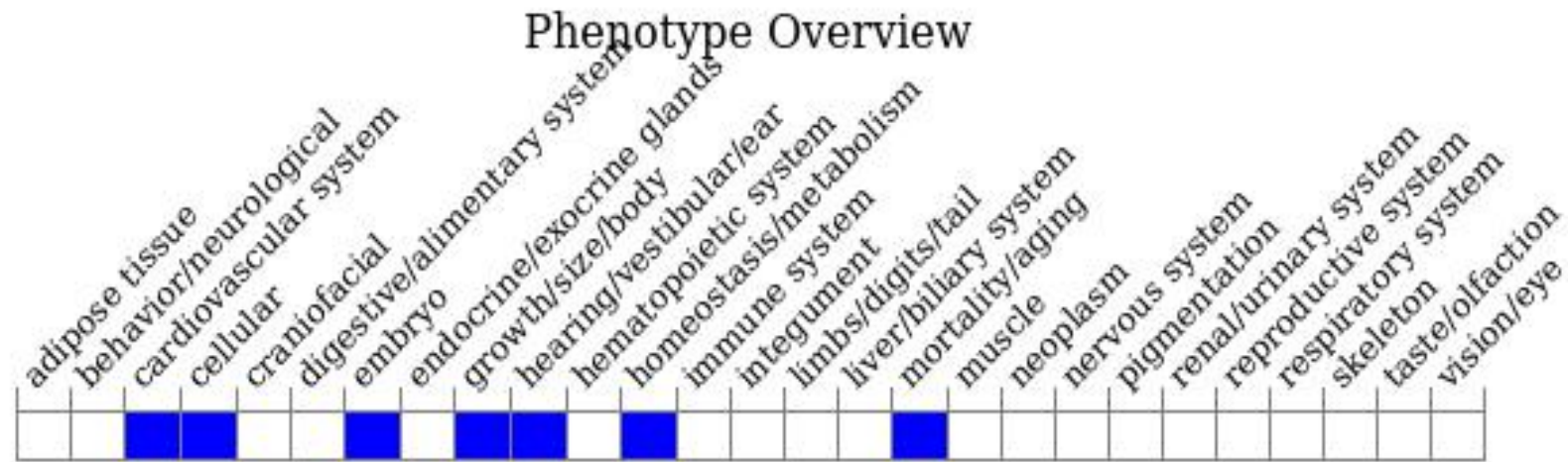




# Protein domain



# Mouse phenotype description(MGI)



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

According to the existing MGI data, mice homozygous for a knock-out allele exhibit embryonic lethality during organogenesis and subtle defects in cell cycle-dependent nuclear movement in neural progenitors.

If you have any questions, you are welcome to inquire.

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